CLAUSEWITZ AT MACH II--HAS CLASSICAL MILITARY THEORY KEPT PACE WITH TECHNOLOGY?

A Monograph
by
Major Glenn A. Gruner
Air Force

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

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Approved by:

LTC Douglas L. Tystad — Monograph Director

COL James R. McDonough, MS — Director, School of Advanced Military Studies

Philip J. Brookes, Ph.D. — Director, Graduate Degree Program

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ABSTRACT

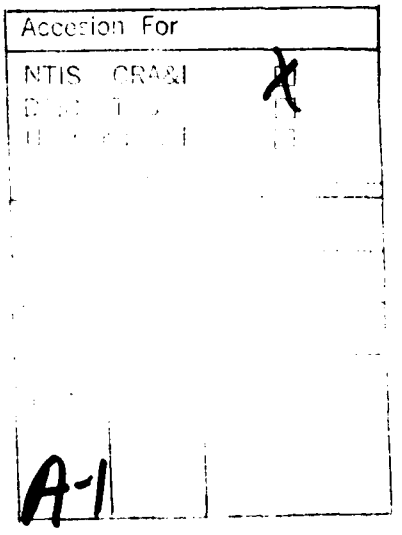
CLAUSEWITZ AT MACH II--HAS CLASSICAL MILITARY THEORY KEPT PACE WITH TECHNOLOGY? By Major Glenn A. Gruner, USAF, 50 pages.

This monograph discusses whether classical military theory as developed by Clausewitz in On War remains relevant in light of military technological advances. The monograph specifically challenges whether the claim that the defense is the intrinsically stronger form of war also holds true for air warfare.

The monograph begins with an examination of Clausewitz's ideas concerning the nature, purpose, and strengths of both offensive and defensive warfare. The monograph then presents the ideas of two airpower theorists--Douhet and Warden--concerning the inherently offensive nature of air warfare.

With this overview of various theories as a foundation, the monograph then uses the critical analysis method from On War to determine the accuracy of Clausewitz's ideas on the defensive form of war for portraying contemporary air warfare. The monograph uses the 1973 Arab-Israeli War as the historical evidence for this critical analysis.

The monograph concludes that the concepts of offense and defense in On War do not accurately portray contemporary air warfare. The author then offers some theoretical considerations for the employment of airpower when developing a campaign plan.



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I. INTRODUCTION

> Theory will have fulfilled its main task when it is used to analyze the constituent elements of war, to distinguish precisely what at first seems fused, to explain in full the properties of the means employed and to show their probable effects, to define clearly the nature of the ends in view, and to illuminate all phases of warfare in a thorough critical inquiry.[1]

These words of Clausewitz in On War concerning the role of military theory remain accurate today. Theory comprises the basic framework from which we analyze the nature of war. It clarifies the typically confused and entangled concepts and ideas associated with war.[2] As such, it becomes a guide for the study of war, to educate the mind of the future commander and to guide him in his self-education, but not to accompany him to the battlefield.[3] In the final analysis, it is the task of theory to study the nature of the ends and means of war to determine as accurately as possible truth concerning the nature of war.[4]

Clausewitz clearly sees a valuable role for theory among professional soldiers and future commanders. While Clausewitz readily admits that a theory cannot possibly address every wartime matter that may confront a commander, he nevertheless emphasizes that a theory based on reality only requires intelligent treatment to conform to action on the battlefield.[5] As a guide for the study of war, and as a frame of reference for action on the battlefield, theory must therefore accurately describe the true nature of warfare.

This leads us to the primary concern of this monograph--does classical military theory, as developed in On War, accurately

portray the warfare of today? Or more specifically, do Clausewitz's classical theoretical concepts on the nature of offensive and defensive warfare also hold true for modern air warfare?

In order to properly respond to the research question, several issues must be discussed. First, is there a significant difference between warfare in general and air warfare in particular? Must there be a different theory for each? Second, is it possible to distinguish between the offensive and defensive forms of air warfare? Finally, at the operational level of war, should air warfare be considered separately from warfare in general, or must it be considered as simply the air component of war as a whole?

To answer these questions, the monograph uses the critical analysis technique that Clausewitz describes in On War. Clausewitz describes the critical analysis process as the application of theoretical truths to actual events. One purpose of this analytical process is to reduce the gap between theory and reality by modifying theory when required as new truths of war emerge.[6] The critical analysis method therefore provides an excellent technique to address the principal issue of this monograph--whether or not classical military theory remains valid as a frame of reference for modern air warfare.

Before beginning the critical analysis process, the monograph first presents and discusses the military theories with potential implications for air warfare--classical military theory

and air warfare theories. These theories provide a foundation against which this paper can then critically analyze historical events. It begins with a discussion of Clausewitz's classical military theory concerning offensive and defensive forms of warfare. Next, it reviews specific air warfare theories developed by Douhet in Command of the Air and Warden in The Air Campaign. Then, using critical analysis, the monograph seeks to determine which theory emerges as the most accurate frame of reference for the employment of modern airpower.

The critical analysis process in On War consists of three different intellectual activities: first, the discovery and interpretation of equivocal facts; second, the tracing of facts back to their causes; and third, the investigation and evaluation of the means employed. Clausewitz places special emphasis on the last two steps of this historical inquiry process, stressing the importance of analyzing everything as close as possible to its basic elements, or to incontrovertible truth.[7] What follows is a brief discussion of the specific methodology that will occur in each step of this critical analysis.

The first step of critical analysis--the discovery and the interpretation of equivocal facts--is an in-depth study of the historical evidence of a war. The monograph uses the employment of airpower by the Israeli Air Force (IAF) during the 1973 Arab-Israeli War as the historical event. This war provides a unique situation where airpower was employed alternatively in operationally defensive and offensive roles. Additionally, it was

a case where both opponents, the IAF and the Arab coalition, benefitted from advanced military technology. Consequently, the 1973 War provides an excellent historical example to evaluate the theoretical truths concerning the offensive and defensive employment of airpower in modern warfare.

The second step of critical analysis--tracing the facts back to their causes--requires us to analyze the strengths and weaknesses of the IAF during the war. Since this monograph compares offensive and defensive air warfare, this section specifically discusses what factors caused the victories and failures for each of these operational methods of employing airpower. Additionally, in an effort to reach incontrovertible truth, the analysis evaluates airpower in the context of the entire war in an effort to determine the true causes for success or failure.

Finally, critical analysis requires us to investigate and evaluate the means employed. Here Clausewitz writes that criticism proper occurs as one evaluates the theoretical lessons to be drawn from history.[8] This section of the monograph seeks to determine which ideas, Clausewitz's, or Douhet and Warden, more accurately describe defensive and offensive air warfare.

The results of this analysis guides us to the final chapter of the monograph--implications for a theater commander. The focus in this section concerns whether or not the employment of airpower requires special considerations beyond the "frame of reference" that Clausewitz provides in On War. Is his classical military

theory adequate for guiding the future commander's study of modern warfare, especially the employment of airpower? The monograph addresses this problem.

II. CLAUSEWITZ AND CLASSICAL STRATEGY

> We have already indicated in general terms that defense is easier than attack. But defense has a passive purpose: *preservation*; and attack a positive one: *conquest*. The latter increases one's own capacity to wage war; the former does not. So in order to state the relationship precisely, we must say that *the defensive form of warfare is intrinsically stronger than the offensive*.[9]

With these words, Clausewitz opens the longest book of his treatise, On War. This book-- Book 6 titled simply "Defense"-- comprises nearly one third the total content of his treatise and contains 30 chapters--far and away his greatest effort. As the quote above suggests, Clausewitz perceives an interaction between the offense and defense. This chapter of the monograph discusses the Clausewitzian view of these two methods of warfare.

Clausewitz did not benefit from the same observations of warfare that we are able to make today. The warfare of his era was confined to the surface of the earth and did not profit from even the most rudimentary military technology that today's soldier would consider essential for battle. While these statements may seem trivial, the reader must remember that On War presents a basic theory of how to *think* about warfare and was not intended to be adaptable to the introduction of each new weapon system.[10] However, our purpose with this monograph is to determine whether Clausewitz's notions concerning offensive and defensive warfare do in fact accommodate contemporary air warfare.

This chapter addresses three key issues concerning offense and defense in On War. First, what are the essential components of offensive and defensive warfare? Second, what is the purpose,

or aim, of each method of warfare? Finally, what are the fundamental factors which contribute to the strength of offensive and defensive warfare? The final evaluation of these questions should provide a solid foundation of classical theory against which we can conduct a critical analysis of the 1973 Arab Israeli War.

A. DEFENSE AND OFFENSE--ESSENTIAL COMPONENTS.

Clausewitz opens his discussion of Book Six--Defense--by first identifying the essential components of the defensive and offensive forms of war.

1. DEFENSE.

Concerning the defense, Clausewitz writes:

> What is the concept of defense? The parrying of a blow. What is its characteristic feature? Awaiting the blow. It is this feature that turns any action into a defensive one; it is the only test by which defense can be distinguished from attack in war.[11]

Here, Clausewitz explicitly states that the defense is composed of two distinct parts--waiting and acting. He then clarifies the interaction of these activities--"Without the former [waiting], it would not be defense, without the latter [acting], it would not be war."[12] While this appears to be simply restating the obvious, Clausewitz's succinct statement concerning the essential components of the defense provides further opportunities to discover the true character of defensive warfare.

Clausewitz then correlates the components of defensive warfare with two specific, measurable variables--time and space. He identifies the activity of waiting with time and the activity

of acting with space.[13] Clausewitz cautions that these two activities do not occur in distinct phases, but rather they continuously alternate throughout a defensive action. This is especially true for a large-scale action such as a campaign or war.[14] This then leads to the factors that he associates with the variables of time and space.

Clausewitz writes, "The concepts characteristic of time--war, campaign, and battle--are parallel to those of space--country, theater of operations, and position."[15] These concepts clearly relate to the contemporary definitions for the strategic, operational, and tactical levels of war.[16] While this appears to be a neat arrangement for an otherwise complex endeavor, Clausewitz recognizes the reality of war by demonstrating the overlap between these conceptual levels. He suggests that a defensive campaign can be fought with offensive battles and that the defensive form of war is not simply a shield, but a shield made up of well-directed offensive blows.[17]

In summary, Clausewitz suggests that the defense consists of two essential components--waiting and acting. At the operational level of war, these activities continuously interact within the time and space elements of a campaign and theater of operations. While a commander conducts a defensive campaign, he may also be orchestrating offensive battles and engagements. However, the essential characteristic of defense requires that a commander must first wait for his space--the theater of operations--to be attacked before transitioning to the offense--the flashing sword

of vengeance.[18]

2. **OFFENSE.** In the classical theory of war, Clausewitz describes the true nature of the offense as an attack with the ultimate object of possessing territory. Quite interesting is the idea that Clausewitz specifically excludes fighting as a purpose from the offensive form of war.[19] He suggests that an attacker strikes only for the purpose of possession, and not to fight an opposing force. The defender must choose to fight and therefore initiate war--meaning to achieve a political objective through violent means.[20] Without a defense that seeks reprisal against the attacker, there can be no violence, and therefore no war.

We discover that the essential characteristic of the offense consists solely of a matter of initiative. The attacker strikes first with the ultimate object of possession. The offensive action is complete in itself and does not have to be complemented by defense. However, Clausewitz later suggests that time and space considerations cause defense to become a necessary evil of the attack.[21] This issue will be discussed in the final section of this chapter. The next section addresses the principal aims of defensive and offensive warfare.

B. *DEFENSE AND OFFENSE--PURPOSE.*

With the theoretical definitions for defense and offense established, the next question concerns what is the primary purpose, or aim, for each of these forms of warfare? Clausewitz portrays a negative aim for the defense and a positive aim for the

offense.

1. **DEFENSE--NEGATIVE AIM--PRESERVATION.** Clausewitz states in On War that the defense has a negative object because of its essentially passive purpose--preservation.[22] This is because the purpose of defense is to increase the capacity of a force to wage war. It allows the military force to increase in strength, relative to the attacker, until the point where the defender possesses enough strength to retaliate. Clausewitz writes:

> When one has used defensive measures successfully, a more favorable balance of strength is usually created; thus the natural course in war is to begin defensively and end by attacking.[23]

The defender then transitions to the attack--the flashing sword of vengeance--because the offense enjoys the positive aim.

2. **OFFENSE--POSITIVE AIM--CONQUEST.** Clausewitz suggests that the offense enjoys the positive aim because only by attacking can one gain a decisive victory.[24] Only through conquest--the conquering and possession of an enemy's territory--can a military force bring war to an end. Therefore, the offense should be the final purpose for a military force, so that war can end on favorable terms.

If war can only end favorably through the offense, why then don't two belligerents simultaneously attack each other. Clausewitz suggests that this is because the offense is the weaker form of warfare. The next section discusses the factors contributing to the relative strengths and weaknesses of the defensive and offensive forms of warfare.

C. DEFENSE AND OFFENSE--FACTORS OF STRENGTH AND WEAKNESS.

Whereas the offense is the positive aim of war, a military force cannot choose this method of warfare at will. Clausewitz suggests that this is so because the offense is the weaker form of warfare and can only be used if the attacker possesses sufficient strength. He writes:

> Anyone who believes himself strong enough to employ the weaker form, attack, can have the higher aim in mind; the lower aim can only be chosen by those who need to take advantage of the stronger form defense.[25]

This then raises the question of what are the factors that Clausewitz identifies as a basis for defense as the stronger form of warfare? Likewise, what are the factors that contribute to the weakness of the offense? These questions guide the discussion for the following section.

1. DEFENSE.

Clausewitz identifies six areas of advantage for defense at the operational level of war. These are: terrain, surprise, concentric attack, theater of operations, popular support, and exploitation of moral forces.[26]

a) TERRAIN.

Clausewitz believes that terrain provides a decisive advantage for the defense. Concerning the significance of terrain, Clausewitz writes:

> It is self-evident that it is the defender who primarily benefits from the terrain. His superiority to produce surprise by virtue of the strength and direction of his own attack stems from the fact that the attack has to approach on roads and paths on which it can be easily observed; the defender's position, on the other hand, is concealed and virtually invisible to his opponent until the decisive moment arrives.[27]

With these words, Clausewitz suggests that the advantage of

terrain for the defense goes beyond selecting an area that provides an obstacle for the attack.[28] Rather, the defender enjoys the benefit of familiarity with the ground to determine beforehand the attacker's probable avenues of approach. Armed with this knowledge, the defender is better able to react and surprise the enemy.

b) SURPRISE. Clausewitz begins his discussion of surprise by stating that surprise becomes "effective when we suddenly face the enemy at one point with far more troops than he expects."[29] On first look, this seems more of an advantage for the attacker due to his possession of the initiative. How then could the defender benefit from this same strength?

Clausewitz explains this apparent contradiction as follows. Due primarily to the advantages realized from terrain, the defender is better placed to spring surprises with both the strength and direction of his own attacks.[30] So by recognizing the need for the defender to eventually retaliate with an attack of his own, and coupled with the advantage of terrain, Clausewitz observes that surprise primarily benefits the defender.

c) CONCENTRIC ATTACK. Clausewitz's discussion of the concentric attack is essentially a link with the previous two strengths--terrain and surprise. Here Clausewitz addresses a situation where the enemy conducts a concentric attack in an effort to envelope the defender. Traditional thinking might conclude that the advantage of such an offense would belong with the attacker, since the defense would be forced into divergent

operations. However, Clausewitz responds differently. He writes:

> What is it in the divergent operations of the defense that offsets these advantages [of a convergent attack]? Plainly, it must be the fact that the troops are closer together and operating on interior lines. . . . Once the defense has embraced the principle of movement . . . the benefit of greater concentration and interior lines becomes a decisive one which is more likely as a rule to lead to victory than a convergent pattern of attack.[31]

Here Clausewitz suggests that three elements of defense--terrain, surprise, and concentric attack--interact to give the defense exceptional strength. Beginning with terrain, the defender can ideally position forces to best react to probable avenues of attack. Once a concentric attack can be determined, the defender then uses interior lines and knowledge of terrain to rapidly concentrate his forces in a surprise attack against the enemy at a time and place of the defender's choosing. This then grants the more likely victory that Clausewitz refers to in the above quote.

While the preceding factors work on the behalf of the defender at both the tactical and operational levels of war, the following factors are unique to the operational level of war.

d) ADVANTAGES OF THE THEATER OF OPERATIONS. The concept that Clausewitz expresses here concerns culmination. As the attacker conducts his operation, he must leave his own fortresses and depots behind. As lines of communication extend and the area of operations becomes larger, the attacking force becomes weaker. Clausewitz concludes that "the defending army, on the other hand, remains intact. It benefits from its fortresses,

nothing depletes its strength, and it is closer to its sources of supply."[32]

Consequently, the defender gains an increasingly greater strength relative to the attacker by simply waiting during a given campaign. In addition to these physical advantages, Clausewitz also submits that the defender gains a moral advantage through support of the populace.

e) SUPPORT OF THE POPULACE. Clausewitz readily admits that this strength may not always be present. In fact, he concedes that a defensive campaign may be fought entirely in enemy territory. However, he concludes that:

> Still, this element [popular support] derives from the concept of the defense alone, and it is applicable in the vast majority of cases. What is meant is primarily (but not exclusively) the effectiveness of the militia, and arming the population.[33]

When it becomes a factor, Clausewitz identifies two advantages gained from popular support--one is the moral strength gained by fighting for one's own home and the protection of his family, while the other is the potential to rapidly increase the size of the fighting force by arming the population. This support of the populace leads to the final strength of the defense--the exploitation of moral factors.

f) HARNESSING OF MORAL FORCES. Clausewitz identifies the significance of moral forces for the strength of the defense, but spends little time explaining this concept. He proposes that while these forces may be found on the side of defense as well as the attack, they are normally associated with the decisive blow of

the counterattack and therefore do not influence the entire course of the defense.[34]

As almost an afterthought, Clausewitz concludes this section of On War with a discussion of the moral force of courage. He writes that courage is the sense of superiority that springs from the awareness that one is taking the initiative.[35] Here Clausewitz suggests that courage originates with the initiative of a counterattack against the enemy, and that the commander must be prepared to exploit this moral force as another strength of the defense.

In summary, Clausewitz identifies six factors of strength for the defense--terrain, surprise, concentric attack, a known theater of operations, support of the populace, and exploitation of moral forces. The only weakness of the defense is the negative aim--a passive purpose of preservation.

2. **OFFENSE.** Although the offense has the positive aim of war--conquest--Clausewitz maintains that the offense is the weaker form of warfare. This is primarily due to the inherent limitations associated with the culmination of an attack. While this factor dominates Clausewitz's evaluation, he also identifies, and subsequently rejects, an offensive strength--initiative. Both of these factors--culmination and initiative--are critical for later discussions of air warfare.

a) **OFFENSIVE WEAKNESS--CULMINATION.** Clausewitz introduces the concept of the culmination of an attack in his discussion of the defense. Here he suggests that by initiating

the campaign, the attacking army cuts itself off from its own theater of operations and becomes weakened by the large area of operations that it must traverse.[36] He concludes that since an attacking force will always deplete its strength during the course of a campaign, it must begin the operation with a significantly stronger force than the defender.

Clausewitz expands on this discussion in his book on the attack. Here he suggests that an attack results from the availability of superior strength--both physical and moral. He further insinuates that both of these factors decrease in strength up to the point where the remaining strength is just enough to maintain a defense and wait for peace. Progressing beyond this point--the culmination point--risks retaliation by a stronger force than the original attack.[37]

b) OFFENSIVE STRENGTH--INITIATIVE. While he maintains that the offense is the weaker form of war, Clausewitz does recognize an advantage for the attack--initiative. Regarding initiative, Clausewitz writes:

> . . . the attack has the advantage of the initiative. As regards surprise and initiative, however, it must be noted that they are infinitely more important and effective in strategy than in tactics. Tactical initiative can rarely be expanded into a major victory, but a strategic one has often brought the whole war to an end at a stroke.[38]

While Clausewitz recognizes this inherent strength of the attack, he subsequently concludes that the relative strengths of the defense nullify the advantage of the initiative. He states that the effectiveness of initiative assumes "major, decisive, and

exceptional mistakes" on the part of the defender, and so consequently initiative does not do much to tip the scales in the favor of the attacker.[39]

D. SOME CONCLUDING THOUGHTS ON CLAUSEWITZ'S IDEAS.

This chapter has focused on a comparison of the relative differences between the offense and defense from a classical Clausewitzian point of view. One key observation that the reader should make concerns the significance of time. The defender must have adequate time to exploit the advantages of the defense. Any revolutionary change to military technology that can fundamentally change the role of time may alter this classical model of the nature of war.

Clausewitz seems to have had some vision for military technology and the future of warfare. He writes:

> If the offense were to invent some major new expedient--which is unlikely in view of the simplicity and inherent necessity that marks everything today--the defense will also have to change its methods. But it will always be certain of having the benefit of terrain, and this will generally ensure its natural superiority. . . [40]

Less than one century after he made this statement, a military technological invention revolutionized warfare--the heavier-than-air aircraft. The aircraft would challenge traditional assumptions in classical military theory concerning time and terrain. The next chapter of the monograph discusses the ideas of two prominent airpower theorists--Giulio Douhet and Colonel John Warden.

III. AIR POWER THEORY

While Clausewitz's ideas have enlightened military professionals for years on how to think about the nature of warfare, he nevertheless did not benefit from observing modern warfare fought in the vertical dimension by aircraft. As airpower theorists noted the unique characteristics of airpower, they questioned the utility of classical military theory and its portrayal of air warfare. This chapter outlines significant air warfare theories as a basis for critical analysis to answer the research question and associated issues.

The chapter begins with a review of the ideas of Giulio Douhet in his dissertation--Command of the Air. His thoughts were heavily influenced by early observations of the unique capabilities of airpower during the Great War (World War I). Then the ideas of Colonel John Warden, who published The Air Campaign in 1988, are discussed. Warden's ideas more accurately reflect the impact of recent technology on contemporary air warfare. The goal of this chapter is to determine the unique considerations affecting the employment of airpower in offensive and defensive operations.

A. GIULIO DOUHET--THE COMMAND OF THE AIR

In The Command of the Air, Douhet seems to totally disregard the ideas of Clausewitz concerning the relative strengths and weaknesses of offense and defense. Rather, Douhet describes the airplane as the "offensive weapon par excellence," and ignores any

role for the defensive employment of airpower or the ability of ground-based defense to down aircraft in flight.[41] While many of Douhet's ideas have now been disproved, his articulation of an inherently offensive role for airpower remains a dominant theme in air warfare theory today.

Douhet begins his discussion by highlighting the unique characteristics of the aircraft. He writes:

> The airplane has complete freedom of action and direction; it can fly to and from any point of the compass in the shortest time--in a straight line--by any route deemed expedient.[42]

Here Douhet recognizes the advantages of military operations unconstrained by terrain. With the ability to operate in the vertical dimension, aircraft possess unique characteristics that allow for greater freedom of action than surface forces.[43] The characteristics identified by Douhet closely parallel those of current Air Force doctrine--speed, range, and flexibility.[44] Besides greater freedom of action, these same characteristics allow aircraft to more effectively exploit the strength of the initiative.

Douhet argues that the greatest advantage of offensive air warfare is the ability to rapidly seize the initiative. He writes:

> The greatest advantage of the offensive is having the initiative in planning operations--that is, being free to choose the point of attack and able to shift its maximum striking forces; whereas the enemy, on the defensive and not knowing the direction of the attack, is compelled to spread his forces thinly to cover all possible points of attack along his line of defense, relying upon being able to shift them in time to the sector actually attacked as soon as the intentions of

the offensive are known.[45]

Here Douhet argues for the offensive advantage of the initiative in much the same manner as Clausewitz. First, both theorists believe that initiative is an advantage for the attack. Second, both Douhet and Clausewitz identify this as a strength because the attacker is free to choose the point of the attack and can then concentrate his force at the time of his choosing. However, at this juncture Clausewitz and Douhet part company.

As discussed in the previous chapter, Clausewitz suggests that the initiative can only be effective if the defense fails to exploit all of its intrinsic strengths. On the other hand, Douhet argues that because of the characteristic of speed and the subsequent ability to control the time element of war, that once the offensive air attack gains the initiative the defense simply cannot react fast enough to effectively parry the blow.[46]

If airpower is able to strike so fast that the enemy has no time to "parry the blow," then the Clausewitz paradigm for defensive war becomes null and void. Without the ability to retaliate with the "flashing sword of vengeance," then according to classical military theory, the defender can only wait and never act! Douhet reinforces this conclusion:

> . . . [aircraft] reverse the situation [of the strength of the defense] by magnifying the advantages of the offensive and at the same time minimizing, if not nullifying, the advantages of the defensive; and moreover, depriving those who are not fully prepared and ready for instant action of time in which to prepare for defense.[47]

In summary, Douhet portrays airpower as an inherently

offensive form of warfare. While he clearly endorses the offensive employment of airpower, he summarily dismisses any legitimate defensive role. Douhet suggests that the inherently offensive characteristics of aircraft allow airpower to exploit the advantages of freedom of action, initiative, and the time value of war in such a way as to revolutionize all warfare and to render the defense the weaker form of war. The chapter on critical analysis will assess the validity of these assertions.

B. COLONEL JOHN A. WARDEN III--THE AIR CAMPAIGN

In the preface to his book--The Air Campaign--Warden relates his purpose for writing. He describes an "attempt to come to grips with the very complex philosophy and theory associated with air war at the operational level."[48] Unlike Douhet, Warden seems to comprehend the complexity that has emerged for air warfare as a result of technology. A basic understanding of Warden's ideas provides the final theoretical basis for the critical analysis of airpower and the relative strengths of the offense and defense.

Warden devotes three chapters in The Air Campaign to the offensive and defensive forms of air warfare. Unfortunately, he fails to directly specify which is the stronger form. He does, however, suggest specific factors contributing to either the strength or weakness of the offense and defense.

Warden suggests several benefits for an offensive approach in air operations. He writes that an offensive approach maintains the initiative and forces the enemy to react, carries the war to

the enemy, and makes maximum use of aircraft by keeping pressure on the enemy.[49] By seizing the initiative, forcing the enemy to react, and then quickly leaving the target area, offensive air warfare can attrit enemy forces while preserving the strength of their own forces.

Warden then discusses the apparent contradiction between the strength of the defense for surface warfare and the strength of the offense for air warfare. Warden suggests that "the defense, in classical land warfare, may well be stronger than the offense, as Clausewitz postulated. In air war, however, the opposite seems to be the case.".[50] Warden then suggests that there are three factors for this apparent contradiction--mobility, rapid concentration, and lack of terrain considerations. The monograph discusses these factors in order.

On mobility, Warden writes, "first, air forces have such tremendous mobility that they can attack from far more directions than can a land army."[51] Those familiar with surface warfare tend to restrict the interpretation of this statement to two dimensions--meaning that air attacks can come from any point on a circle surrounding the target. In fact, the mobility of airpower permits attacks in three dimensions--meaning that attacks can occur from any point on a hemisphere around the target.

Second, Warden asserts that "the rapidity with which air forces move makes concentration against them more difficult than concentrating to defend against a land attack."[52] Here Warden refers to the critical elements of time and initiative--the same

factors addressed by Douhet. The ability of air forces to rapidly concentrate, attack, and disperse before surface forces can respond negates any advantages gained by staying on the defense.

Concerning the final point, Warden writes that "the defender on land normally has prepared positions from which he can fire at an attacker who must by definition move across open territory where he is at a decided disadvantage."[33] Whereas Clausewitz claimed that knowledge of the terrain and probable avenues of attack was the greatest strength of the defense, Warden largely discounts this advantage in modern warfare. The defender no longer can be sure that an attacker must move across territory where he has a disadvantage. More likely, an attacking force will combine a concentrated air attack along with a coordinated surface attack to achieve the essential mass to overwhelm and destroy the defender.

Following this assessment of the offense, Warden then offers some thoughts on the defensive employment of airpower. He suggests there are two general principles that must be followed when constrained to the defensive employment of airpower.

First, the defender must "concentrate forces, to confront the enemy with superior numbers in a particular battle, sector, or time." As difficult as it is, the defender must be able to either accurately predict the time and place of an attack, or possess some type of early warning capability to minimize the impact of the initiative. The defender must then be able to adequately confront the attacker with appropriate forces to repel the strike.

But this remains a position of weakness. Why? Because it requires the assumption of significant risk. This leads to Warden's second point.

Here Warden suggests an unpopular decision for the defender. He writes that the defense must:

> . . . accept the fact that it is not possible to defend everywhere and everything: He who tries to defend all defends nothing. Penetrations are going to take place. When that fact is accepted, it becomes easier to do the concentrating which will permit significant victories with acceptable defender losses.[54]

There is remarkable similarity of this argument to those made by both Clausewitz and Douhet. It is simply impossible to know with certainty the direction and time an air attack will take place. This predicament forces the defender to choose between a thin defense around the theater of operations, or to predict the most probable location of an attack so that he can posture defensive forces and assume risk elsewhere. While Clausewitz would also acknowledge this predicament, the essential difference once again is time. Will the defense have enough time to effectively defend against a concentrated air attack? This becomes another issue for critical analysis.

IV. CRITICAL ANALYSIS--THE 1973 ARAB-ISRAELI WAR

Clausewitz's critical analysis technique provides an excellent method to assess the validity of various theories of warfare. Since the purpose of this paper is to determine the applicability of classical military theory relative to the offensive and defensive employment of airpower, critical analysis provides the means for conducting this assessment.

This chapter uses historical data from the 1973 Arab-Israeli War as the factual evidence for assessing whether classical military theory accurately portrays contemporary air warfare. The first section presents the results of both Arab and Israeli air operations during the October War and constitutes the first step of critical analysis--the discovery and interpretation of facts. Following this is an analysis which seeks to link the mode of air warfare, offense or defense, to the air operations results discussed in the first section. This comprises the second step of critical analysis--the tracing of facts to their causes. Finally, the chapter conducts an investigation and evaluation of the means of air warfare used during the October War--the final step of critical analysis. This section determines whether classical military theory accurately portrays modern air warfare.

A. INTERPRETATION OF FACTS--THE 1973 ARAB-ISRAELI WAR AND THE RESULTS OF AIRPOWER.

1. OVERVIEW OF THE WAR. The 1973 Arab-Israeli War, also known as the Yom Kippur War or the Ramadan War, began on 6 October

1973 and lasted approximately three weeks. It was similar to the 1967 war in that Israel fought a theater campaign on multiple fronts--in this case, on the Golan Heights against Syria, and in the Sinai against Egypt. However, the 1973 war was unique in that Israel did not act preemptively and began the war fighting a defensive theater campaign against a well-planned and coordinated Arab offensive.

Israel entered the war fighting defensively due primarily to the strategic surprise achieved by the Arab coalition and also, in part, to a political decision by Golda Meir prohibiting a preemptive air strike.[55] The campaign began with defensive operations for about three days and then transitioned to offensive counterattacks, first against Syria, the greater strategic threat, and then against Egypt. The counterattack against Syria began on approximately 9 October and ended 13 October, while the counterattack against Egypt began around 15 October and ended about 22 October.[56] The war concluded with a ceasefire on 24 October with three IDF divisions on the west side of the Suez Canal (enveloping the Egyptian Third Army) and with Israeli forces staunchly defending the Golan Heights.[57]

While this presents a brief overview of the war as a whole, we now turn our focus to the significant air operations of the 1973 war.

2. OVERVIEW OF AIR OPERATIONS. Two significantly different approaches where taken for the employment of air power in the October War--the Arab approach and the IAF approach.

a) ARAB AIR OPERATIONS. Despite a nearly three to one advantage in combat aircraft, both the Syrian and Egyptian air forces acknowledged an inability to achieve air superiority against the better trained and better equipped IAF.[58] General Mohommed Hosny Moubarak, Commander in Chief of the Egyptian Air Force, devised a strategy that relied upon Soviet-built air defense weapons to provide air cover against direct Israeli air attack.[59] The Syrians also adopted this approach. Trevor Dupuy writes in his book, Elusive Victory:

> So, like the Egyptians, the Syrians entrusted the security of their air space mainly to SAM missiles and antiaircraft guns, but also, like the Egyptians, integrated their air force into the air defense system.[60]

This air defense system requires greater explanation to realize its inherent strengths. The system consisted of predominantly four surface-to-air missile (SAM) systems and one anti-aircraft artillery (AAA) system. Of the SAMs, three types--SA-2, SA-3, and SA-6--provided high altitude coverage and operated on three discrete radar patterns and frequencies. The SA-7 SAM, a heat-seeking, shoulder-fired missile, combined with the highly effective ZSU-23-4 AAA system to provide low altitude coverage.[61] This air defense system devastated Israeli pilots.

Because of the integration of the air defense system, pilots were forced to react to one system which then placed them in the optimum engagement zone of another. The effectiveness of the air defense was proven when the IAF suffered approximately one half of their total air losses for the war in the initial three days of

the campaign, primarily against the air defense system.[62]

As for the Arab air forces, Dupuy states that "neither the Egyptian nor the Syrian air forces made any serious effort to penetrate air space over Israel."[63] While there were some limited attacks on the first day of the war against Israeli facilities in the Sinai, the predominant employment of Arab air forces was to use aircraft to augment the air defense system in a defensive counterair role.[64]

In summary, we observe that the Arab forces relied chiefly on an integrated SAM/AAA air defense system to provide control of the air over their ground forces. In recognition of IAF dominance in air-to-air engagements, both the Syrian and Egyptian air forces operated primarily over friendly airspace to reinforce the air defense system, with only a few, limited attempts to attack Israeli ground forces beyond the protective range of their SAMs.

Employing airpower in this manner, the Arab air forces suffered a surprisingly high attrition rate. The Arab coalition air forces began the war with 990 fighter aircraft--Egypt-550, Syria-275, Iraq-73, and others with 92.[65] During the war, the Arab air forces lost 390 fighters for a loss rate of 39%.[66] This occurred in spite of Arab intentions to employ air forces defensively. During the war, Dupuy estimates that Arab forces flew 10,000 fighter sorties.[67] Extrapolating this data we discover that Arab air forces lost one aircraft for each 26 sorties flown.

Having depicted the facts concerning the ways in which the

Arab coalition employed their airpower, the monograph will now present data on Israeli air efforts.

b) ISRAELI AIR OPERATIONS. Once an attack against Israel was imminent, Major General Benjamen Peled, Commander of the IAF, proposed a preemptive air strike against the Arab coalition for early on 6 October. This air strike was to target primarily enemy airfields, electronic installations, and air defense systems in order to quickly gain theater air superiority. Peled argued that there was a difference between a preemptive air strike and a preemptive war--the Arabs had already started the war. Prime Minister Golda Meir, however, vetoed the idea of a preemptive air strike based on her political decision that the world must know, without a doubt, that the Arabs had begun the 1973 war.[68] This decision prohibited Israel from conducting a strategically defensive strategy with an immediate retaliatory strike option to begin an operationally offensive air campaign.

The IAF then faced a dilemma. For the first time in the modern history of Israel, they would enter a war without first securing command of the air. Further, intelligence assets had predicted that the attack would begin at 6:00 p.m., when in fact the coordinated attack by Egypt and Syria began at 2:05 p.m.[69] The result was that a large number of IAF aircraft were undergoing a change in weapons loads, and could not be effectively employed when the Arab attack began.

Since the Arab attack had achieved strategic surprise, the

IAF was forced to immediately support ground forces on both the Sinai and Golan fronts. The IDF was not yet fully mobilized and ground troops faced overwhelming odds against Arab attacks. The primary focus for the IAF during the first three days of the war was to provide direct support to ground troops, since protection was required for that period of time for the IDF to fully mobilize. Concerning the Israeli air effort during this time, the IAF flew 2,500 sorties against Egypt of which 70 percent were against ground forces, 6 percent against airfields, 15 percent against independent missile concentrations, and 9 percent against Port Said and other towns.[70]

While these statistics reflect only the Sinai front, the air effort on the Golan was similar.[71] This clearly shows that the main effort for the IAF was initially on protecting and supporting ground forces. The cost of this decision was that the IAF was not able to immediately achieve local air superiority and paid dearly in terms of aircraft and pilots lost.

The initial close support efforts of the IAF permitted the IDF to quickly mobilize and begin sending units to both fronts. Once mobilized ground forces began arriving in mass at both fronts, the operational focus of the IAF then shifted to the crucial Golan front.

Since the strategic depth at the Golan was much shallower than that at the Sinai, the Golan was seen as critical for the national survival of Israel.[72] For the next week, the IAF focused their efforts on the operational defense of the Golan.[73]

But the IAF could not continue to sustain the huge attrition rates of the first few days. They first had to find a solution to defeat the Syrian air defense system in order to be more effective in ground support missions.

The successful effort by the IAF to defeat the Syrian SAM system actually began as the result of Syrian long-range FROG surface-to-surface missile attacks against Israel on October 7 and 8. While the Syrians maintained that these attacks were aimed at Israeli air bases, the Israelis believed this to be an attempt to terrorize the civilian population.[74] The IAF retaliated with deep strikes against Syrian ports, oil refineries, and the Syrian Defense Ministry.[75] Syria, in turn, responded by displacing SAM systems away from the front to protect these high value targets. Dupuy writes:

> By the 11th a number of Syrian SAMs had been destroyed, more had been forced to displace, and the integrated effectiveness of the SAM system had been seriously damaged. As a result, Israeli aircraft were able to return to more effective close support missions as well as continuing their suppressive efforts against the remainder of the SAMs.[76]

Once freedom of action had been reestablished in the north, the IAF was able to effectively attack SAM sites and support ground operations, and the IDF consequently conducted a successful counterattack. The IAF was then able to transition their operational focus towards the Sinai.

The IAF shift of effort to the Sinai corresponded roughly with Major General Sharon's crossing of the Suez Canal on 16 October.[77] Once again the IAF could not provide effective close

air support when confronted by the integrated air defense system. However, ground forces would play the key role in defeating the SAMs in the Sinai.

Elements from both Sharon's and Adan's divisions were able to execute successful raids into the interior of Egypt, and either destroyed or forced key SAM sites to displace. Sharon's raid in particular was quite successful. Israeli tanks destroyed three SA-2 positions and forced the displacement of at least one SA-6 site.[78] Adan's raid also achieved impressive results. Forces from his division destroyed three SAM sites in a single day.[79] This innovative solution to the SAM problem allowed the IAF to continue attacks against a weakened air defense system, and to give effective air support to facilitate the continuing ground assault.[80]

Concerning aircraft losses, the IAF suffered surprisingly low attrition rates relative to the Arab coalition. The Israeli Air Force began the war with 352 combat aircraft.[81] Throughout the war, the IAF lost 102 fighters for a loss rate of 29%.[82] Dupuy estimates that the IAF flew approximately 10,500 fighter sorties.[83] With this information we see that the IAF lost one aircraft for each 102 fighter sorties flown--nearly four times better than the rate for the Arab air forces.

Having noted the facts associated with the employment of airpower during the October War, the monograph now analyzes how the two air forces, Israeli and Arab, were primarily employed--offensively or defensively.

B. DETERMINING CAUSE--AN ANALYSIS OF AIR OPERATIONS IN THE OCTOBER WAR.

This section links the specific modes of air warfare, offense or defense, to the results obtained by the Israeli and Arab air forces. This comparison should indicate whether there is causal relationship between the mode of air warfare employed and the general results of an air operation.

1. DEFENSIVE AIR CAMPAIGN--ARAB AIR FORCES. As discussed in a previous chapter, Clausewitz suggests in On War that the defense consists of two specific factors--waiting and acting. The defender chooses to wait in order to *preserve his force*. This preservation is a key element of defense as it allows the defender to retaliate, once favorable force ratios exist, in a counterattack against the attacker.

In terms of air warfare, the concept of the defense is very similar. One author suggests that defensive air warfare consists of those air actions undertaken in response to enemy initiatives and that are directed against the attacking enemy forces.[84] He recognizes the same factors of the defense as Clausewitz, first waiting, and then reacting to an enemy attack.

As suggested in the first section of this chapter, Arab air forces employed airpower in primarily a defensive mode during the October War. The monograph reaches this conclusion for two reasons. First, the Arab air forces never conducted a concerted, persistent air offensive.[85] The Arab air forces acknowledged the dominance of the IAF in air-to-air combat and consciously decided

to surrender the operational aerial initiative to the IAF.

Second, the Arab air forces focused their efforts on reinforcing the air defense network over friendly soil. Here again, the Arab air forces allowed the IAF to seize and maintain the initiative by allowing them to choose the time and place of their air attacks. Arab air forces then reacted to these attacks in an effort to drive IAF losses to unacceptable levels, but they were largely unsuccessful. By employing their air forces in predominantly a defensive mode, the Arab coalition hoped to *preserve* the strength of these forces for a later time.

While the Arab air forces employed airpower defensively, the Israeli Air Force concentrated primarily on offensive operations.

2. **OFFENSIVE AIR CAMPAIGN--ISRAELI AIR FORCE.** Concerning the offense, we recall from On War that Clausewitz described the offense as an attack with the object of possession--specifically the possession of an enemy's territory. As such, the offense carries with it a positive aim, or the conquest of the enemy. The attacker immediately seeks the initiative and aims to exploit this initiative for the defeat of the enemy.

Here again, the concept for offensive air warfare closely parallels the offensive concept suggested by Clausewitz. One author proposes that the aerospace offense consists of those air actions undertaken on one's own initiative and directed against an enemy or enemy-controlled area or assets at a time and place of one's choosing.[86] Both authors emphasize that the offensive form of warfare has the initiative. While Clausewitz associates the

offense primarily with the conquest, or possession of territory, it would be reasonable for the main purpose of an air offensive to be the possession, or control, of an enemy's "air territory."

With these ideas as the underlying concept for an air offensive, it appears that the IAF fought an offensive air campaign at the operational level of war for the entire October War. At no time did the IAF have to react to an Arab air attack against Israel.

While it may be argued that the IAF was reacting to the front presenting the greatest threat, the IAF was able to maintain the initiative by always choosing the time and place of their attacks. This was shown as the IAF initially attacked enemy ground forces on both fronts to protect mobilizing forces, then shifted to deep air attacks and offensive counterair missions against Syria, and then shifted again to close air support and offensive counterair missions on the Sinai.[87]

Although the IAF maintained the initiative and the offensive at the operational level, the tactical employment of Israeli airpower was initially defensive and then, after the first three days, transitioned to the offense.

This monograph suggests that the IAF had to fight defensively at the tactical level for two reasons. First, Israeli aircraft did not have local control of the air, and therefore could not claim the initiative over the battlefield. Israeli pilots were forced to react to SAMs and AAA in their efforts to attack Arab forces. Since pilots were defensively reacting to

ground-based air defense systems, they were unable to effectively attack their targets.

The second indication that the IAF was fighting a tactically defensive war is because following excessive air losses, they were directed to avoid the SAM belts on both the Golan and Sinai fronts. Israeli air commanders directed their pilots to not approach closer than 15 kilometers from the old ceasefire lines.[88] Clearly this limitation restricted Israeli air freedom of action at the tactical level and robbed them of any efforts to maintain the initiative. As this directive was aimed at preserving the IAF, we can conclude that the IAF was fighting a tactically defensive air war at this point.

However, once the air defense systems were weakened, the IAF was able to transition to offensive employment, at both the tactical and operational levels of war, for the remainder of the conflict. Borrowing from current Air Force doctrine, the IAF could "dictate the time, place, purpose, scope, intensity, and pace of operations" for the remainder of the air war.[89] Indisputably, the Israeli focus was on the offensive employment of airpower through a primarily offensive air campaign.

C. EVALUATION OF THE MEANS--RELEVANCE OF CLASSICAL MILITARY THEORY FOR MODERN AIR WARFARE.

This section presents the final step of critical analysis--the investigation and evaluation of the means employed. Here the monograph determines whether Clausewitz's classical military

theory or the ideas of airpower theorists more accurately portray contemporary air warfare.

Clausewitz's theory of the defense as the intrinsically stronger form of war was validated during the 1973 Arab-Israeli War for warfare as a whole. Israel fought defensively as the army was mobilizing. As the enemy attacks on both the Sinai and Golan fronts began to weaken, the relative strength of forces shifted to Israel's favor. At that moment, the IDF was able to conduct a counteroffensive--the flashing sword of vengeance--and concluded the war on favorable terms. Therefore, modern joint warfare appears to validate Clausewitz's theory. But does classical military theory accurately portray modern air warfare?

From the previous discussions of this chapter, it appears that classical military theory, concerning the defense as the intrinsically stronger form of war, does not accurately portray modern air warfare.

Clausewitz believed that the defense, consisting of the essential elements of waiting and then acting, was the stronger form of warfare because of its primary aim--preservation. By waiting for the attack and exploiting the factors of strength--terrain, surprise, concentric attack, advantages of the theater of operations, support of the populace, and harnessing of moral forces--the defense should be able to increase its relative strength against an attacker until the decision for a retaliatory strike. But this does not happen in air warfare. Rather, each time an air force in the October War assumed the defense at the

tactical or operational level, its relative losses were greater than those of the enemy.

At the tactical level of air warfare, the IAF initially fought a defensive air operation because they were forced to react to Syrian and Egyptian SAMs--the SAMs had the tactical initiative in the air. As a result, the IAF experienced unacceptable attrition rates. As discussed earlier, nearly one half of all Israeli air losses--50 of 102 aircraft--took place at this time. While the defensive employment of airpower was necessary to gain time for IDF mobilization, it was nevertheless the weaker form of tactical air warfare. The IAF experienced their greatest losses defending against SAMs and AAA.

At the operational level, the monograph suggests that the Arab air forces conducted primarily a defensive air campaign. Yet, while conducing this defensive operation, their attrition rate of 39% was much higher than that of the IAF attrition rate of 29%. In spite of nearly a three to one advantage in combat aircraft--990 to 352--the Arab air forces were losing aircraft at a greater rate than the IAF.

The evidence and analysis of the monograph indicate that for modern air warfare, the offense is the stronger form of warfare. If this is true, what are the implications for a theater campaign plan?

V. IMPLICATIONS FOR CAMPAIGN PLANNING

The conclusion that the offense is the stronger form of air warfare has two implications concerning the employment of airpower at the operational level of war. One concerns the employment of airpower in general, while the other addresses the orchestration of airpower within a theater campaign plan.

Since the monograph concludes that the offense is the stronger form of air warfare, it would seem beneficial to a theater commander to employ airpower predominantly in an offensive manner. Army doctrine, both present and emerging, provides a good framework for this offensive employment.

Army doctrine identifies a set of basic tenets that describe the characteristics of successful operations. Current Army doctrine in FM 100-5, Operations, identifies these tenets as agility, initiative, depth, and synchronization.[90] Emerging Army doctrine in FM 100-5, Operations (Final Draft), adds the tenet of versatility.[91] At the operational level of war, the offensive employment of airpower is uniquely capable of achieving three of these tenets-- agility, initiative, and depth.

AFM 1-1, Volume I states that the inherent speed, range, and flexibility of aerospace power combine to make it the most versatile component of military power.[92] These inherently offensive characteristics of airpower provide the capacity to realize the tenets of initiative, depth, and agility at the operational level of war.

The speed of offensive airpower provides *operational*

initiative. As suggested by the analysis of airpower theorists earlier in this paper, the speed of aircraft exploits the initiative of the attack far beyond that ever conceptualized by Clausewitz. He assumed that defending surface forces would always have time to react to an initial attack. The analysis of the 1973 Arab-Israeli War suggests that air operations can seize the initiative at the operational level of war and provide many opportunities--including the enhanced protection of surface forces.

The range of offensive airpower provides *operational depth*. There are many systems capable of influencing a campaign or major operation at operational depths. But only airpower can concentrate to achieve mass for extended periods of time and decisively influence a campaign at an operational depth. The deep air attacks on Syrian ports, airfields, and military headquarters illustrated the potential of offensive airpower at operational depth.

The flexibility of offensive airpower provides *operational agility*. Because of its unique characteristic of flexibility, airpower provides effective operational agility across an entire theater of war. Once again, the IAF demonstrated this capability during the 1973 Arab-Israeli War when they quickly shifted the main effort of airpower between the Sinai and Golan fronts. With airpower, this operational agility operates in terms of minutes and hours, rather than days and weeks.

The theater commander should recognize the unique

capabilities inherent with the offensive employment of airpower. Ignoring these tenets could restrict air operations to the weaker, defensive form such as the Arab air forces employed during the 1973 War.

On the other hand, the 1973 Arab-Israeli War indicated at least two situations where the defensive form of air warfare could be appropriate. The first concerns limitations on employment options. For any number of reasons, national policy may restrict airpower to defensive operations. Such a situation occurred in Operation DESERT STORM when coalition air forces were limited to defensive counterair operations prior to 17 January 1991. This limitation was to avoid provoking Iraqi ground forces into an early attack before coalition forces had sufficient strength to conduct an offensive.[93] Clearly this is a valid example of a theater campaign where air forces should be limited to defensive operations.

The second issue for the legitimate defensive employment of airpower concerns the support of a tactical military operation that carries strategic significance. An example of this occurred during the October War when Israeli pilots fought defensive air engagements against SAMs while attempting to support ground forces. If the immediate support of ground forces had not been required in order to allow time for full mobilization, the IAF would have begun the campaign attacking air bases and SAM sites to seize local air superiority and the aerial initiative. However, the IAF employed the weaker, defensive form of air warfare because

it was critical that ground forces receive immediate air support to provide time for full mobilization.

Both of these situations--employment limitations and the immediate support of critical surface operations--suggest times when airpower may need to be temporarily employed defensively during an air campaign.

While these examples provide some general considerations for employing airpower, the monograph further suggests ways to orchestrate airpower within an overall theater campaign plan. Warden suggests in The Air Campaign that in addition to a theater campaign plan, there should always be a supporting air campaign.[94] The observations of this monograph support Warden's concept.

The October War provided several examples of how an offensive air campaign effectively complemented and supported a defensive theater campaign. Also, the flexibility of airpower provided for rapid transitions from one major operation to another while operating concurrently at the tactical, operational, and strategic levels of war.

These situations show how, at the operational level of war, air operations can focus on an entirely different mode of warfare--offense or defense--from the overall campaign, or that air operations can rapidly change from one geographic location to another within a theater of operations. Such agility seems to strengthen Warden's idea that there should be a separate air campaign in support of a theater campaign plan.

VI. IMPLICATIONS FOR A THEORY OF AIR WARFARE

The monograph concludes that classical military theory defined by Clausewitz in On War does not accurately portray air warfare. Likewise, the dissertations on airpower by Douhet and Warden also fail to meet the purpose of theory--many of Douhet's ideas have been discounted due to advances in military technology and Warden describes more how to conduct air warfare than how to think about air warfare.

Using Clausewitz's definition for theory--a basic framework from which one can analyze the nature of warfare--there does not appear to be a coherent theory for air warfare today. A separate theory of air warfare is needed.

As presented in this monograph, the aerospace characteristics of speed, range, and flexibility contribute to the overwhelming offensive nature of this element of military force. Aerospace forces must be thought of in an entirely different manner from surface forces, both in independent operations and in operations with surface forces. The future vision for aerospace warfare suggests military operations that can exploit four dimensions--width, depth, height, and time. This special warfare demands an accurate frame of reference to support a detailed analysis--a distinctive theory for aerospace warfare.

END NOTES

1. Carl von Clausewitz, On War, ed and trans by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1984), p. 141.

2. Clausewitz, On War, p. 132.

3. Clausewitz, On War, p. 141.

4. Clausewitz, On War, p. 142.

5. Clausewitz, On War, pp. 140-142.

6. Clausewitz, On War, p. 156.

7. Clausewitz, On War, p. 156.

8. Clausewitz, On War, p. 156.

9. Clausewitz, On War, p. 358.

10. The notion that Clausewitz presents ideas on how to *think* about warfare, versus how to *conduct* warfare was developed during a USA Command and General Staff College class--C699, The Evolution of Military Thought--taught by LTC Robert D. Ramsey III, Spring, 1992.

11. Clausewitz, On War, p. 357.

12. Clausewitz, On War, p. 380.

13. Clausewitz, On War, p. 379.

14. Clausewitz, On War, p. 379.

15. Clausewitz, On War, p. 379.

16. Joint Test Pub 5-0, Doctrine for Planning Joint Operations, 26 July 1991, (Washington, DC: Government Printing Office, 1991), pp. GL-11 to GL-13.

17. Clausewitz, On War, p. 357.

18. Clausewitz, On War, p. 370.

19. Clausewitz, On War, p. 377.

20. Clausewitz, On War, pp. 75-88.

21. Clausewitz, On War, p. 524.

22. Clausewitz, On War, p. 358.

23. Clausewitz, On War, p. 358.

24. Clausewitz, On War, p. 358.

25. Clausewitz, On War, p. 359.

26. Clausewitz, On War, p. 363.

27. Clausewitz, On War, p. 361.

28. Clausewitz, On War, p. 360.

29. Clausewitz, On War, p. 360.

30. Clausewitz, On War, p. 361.

31. Clausewitz, On War, p. 368.

32. Clausewitz, On War, p. 365.

33. Clausewitz, On War, p. 365.

34. Clausewitz, On War, p. 366.

35. Clausewitz, On War, p. 366.

36. Clausewitz, On War, p. 365.

37. Clausewitz, On War, p. 528.

38. Clausewitz, On War, p. 363.

39. Clausewitz, On War, p. 364.

40. Clausewitz, On War, p. 362.

41. Giulio Douhet, The Command of the Air, trans. by Dino Ferrari, edited by Richard H. Kohn and Joseph P. Harahan (Washington, DC: Office of Air Force History, 1983), p. 15.

42. Douhet, Command of the Air, p. 9.

43. Douhet, Command of the Air, p. 16.

44. U.S., Department of the Air Force, Air Force Manual 1-1, Volume I, Basic Aerospace Doctrine of the United States Air Force, (Washington, DC: Government Printing Office, 1992), p. 5.

45. Douhet, Command of the Air, p. 16.

46. Douhet, Command of the Air, p. 16.

47. Douhet, Command of ,the Air, p. 15.

48. John A. Warden, Colonel, USAF, The Air Campaign, (Washington, DC: National Defense University Press, 1988), p. xvii.

49. Warden, The Air Campaign, p. 26.

50. Warden, The Air Campaign, p. 66.

51. Warden, The Air Campaign, p. 66.

52. Warden, The Air Campaign, p. 66.

53. Warden, The Air Campaign, p. 66.

54. Warden, The Air Campaign, p. 70.

55. Louis Williams, ed., Military Aspects of the Israeli-Arab Conflict, (Tel Aviv, Israel: University Publishing Projects, 1975), pp. 258-259.

56. Colonel Trevor N. Dupuy, USA, Ret., Elusive Victory, (Fairfax, VA: Hero Books, 1984), pp. 453-469 and pp. 492-529.

57. Chaim Herzog, The Arab-Israeli Wars, (New York, NY: Random House, Inc., 1982), p. 283.

58. Dupuy, Elusive Victory, p. 606.

59. Dupuy, Elusive Victory, pp. 548-549.

60. Dupuy, Elusive Victory, p. 441.

61. John W. R. Taylor, "Gallery of Soviet Aerospace Weapons," Air Force Magazine, March, 1990, pp. 71-88.

62. Chaim Herzog, The Arab-Israeli Wars, (New York, NY: Random House, Inc., 1982), p.311.

63. Dupuy, Elusive Victory, p. 556.

64. AFM 1-1, Vol I, March 1992, p. 6, describes defensive counterair missions as those operations which detect, identify, intercept, and destroy enemy air forces attempting to attack friendly forces or to penetrate the airspace above friendly surface forces.

65. Colonel Trevor N. Dupuy, USA, Ret., Elusive Victory, (Fairfax, VA: Hero Books, 1984), p. 606.

66. Dupuy, Elusive Victory, p. 609.

67. Dupuy, Elusive Victory, p. 550.

68. Dupuy, Elusive Victory, p. 551.

69. Dupuy, Elusive Victory, p. 551.

70. Edgar O'Ballance, No Victor, No Vanquished, (Novato, CA: Presidio Press, 1978), p. 297.

71. Dupuy, Elusive Victory, p. 450.

72. Williams, ed., Military Aspects, p. 241.

73. Dupuy, Elusive Victory, p. 450.

74. Dupuy, Elusive Victory, p. 465.

75. Dupuy, Elusive Victory, pp. 465-467. Current Air Force doctrine, AFM 1-1, Vol 1, p. 12, would describe these strikes as strategic attack missions--missions executed to achieve maximum destruction of the enemy's ability to wage war. The effects of these strategic attacks had operational significance when Syria repositioned SAM sites away from the Golan front.

76. Dupuy, Elusive Victory, p. 465.

77. Dupuy, Elusive Victory, p. 499.

78. Dupuy, Elusive Victory, pp. 503-505.

79. Dupuy, Elusive Victory, p.515.

80. Dupuy, Elusive Victory, p. 552.

81. Dupuy, Elusive Victory, p. 606.

82. Herzog, The Arab-Israeli Wars, p. 311.

83. Dupuy, Elusive Victory, p. 549.

84. Arthur L. Bennett, Jr., Command of the Aerospace: Convergence of Theory and Technology in Shaping an Aerospace Force for 2025, (Maxwell AFB, AL: Air University Press, 1986), p.56.

85. Dupuy, Elusive Victory, p. 556.

86. Bennett, Command of the Aerospace, p. 55.

87. AFM 1-1, Vol I, March 1992, p. 6, defines offensive counterair as those air operations that seek out and neutralize or destroy enemy air forces and ground-based defenses at a time and place of our choosing.

88. Dupuy, Elusive Victory, p. 551.

89. U.S., Department of the Air Force, Air Force Manual 1-1, Volume II, Basic Aerospace Doctrine of the United States Air Force, (Washington, DC: Government Printing Office, 1992), p. 10.

90. U.S., Department of the Army, Field Manual 100-5, Operations, (Washington, DC: Government Printing Office, 1986), pp. 14-18.

91. U.S., Department of the Army, FM 100-5, Operations (Final Draft), (Washington, DC: Government Printing Office, 1993), pp. 2-10 to 2-17.

92. AFM 1-1, Vol I, p. 5.

93. James P. Coyne, Airpower in the Gulf, (Arlington, VA: Aerospace Education Foundation, 1992), pp. 25-42.

94. Warden, The Air Campaign, p. 153.

SELECTED BIBLIOGRAPHY

BOOKS

Clausewitz, Carl von. On War. Edited and Translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1984.

Coyne, James P. Airpower in the Gulf. Arlington, VA: Aerospace Education Foundation, 1992.

Douhet, Giulio. The Command of the Air. Translated by Dino Ferrari. Edited by Richard H. Kohn and Joseph P. Harahan. Washington, DC: Office of Air Force History, 1983.

Dupuy, Trevor N., Colonel, USA, Ret. Elusive Victory. Fairfax, VA: Hero Books, 1984.

Herzog, Chaim. The Arab-Israeli Wars. New York, NY: Random House Inc., 1982.

O'Ballance, Edgar. No Victor, No Vanquished. Novato, CA: Presidio Press, 1978.

Warden, John A., III. The Air Campaign. Washington, DC: National Defense University Press, 1988.

U.S. GOVERNMENT PUBLICATIONS

U.S. Department of the Air Force. Air Force Manual 1-1, Volume I, Basic Aerospace Doctrine of the United States Air Force, 1992. Washington, DC: Government Printing Office, 1992.

U.S. Department of the Air Force. Air Force Manual 1-1, Volume II, Basic Aerospace Doctrine of the United States Air Force, 1992. Washington, DC: Government Printing Office, 1992.

U.S. Department of the Army. Field Manual 100-5, Operations, 1986. Washington, DC: Government Printing Office, 1986.

U.S. Department of the Army. Final Draft, Field Manual 100-5, Operations, 1993. Washington, DC: Government Printing Office, 1993.

U.S. Department of Defense. Joint Test Pub 5-0, Doctrine for Planning Joint Operations. Washington, DC: Government Printing Office, 1991.

ARTICLES

Taylor, John W.R. "Gallery of Soviet Aerospace Weapons." Air Force Magazine, March, 1990, pp. 71-88.

OTHER WORKS--PUBLISHED AND UNPUBLISHED

Bennett, Arthur L., Jr., Major, USAF. Command of the Aerospace: Convergence of Theory and Technology in Shaping an Aerospace Force for 2025. A Center for Aerospace Doctrine, Research, and Education Research Report. Maxwell AFB, AL: Air University Press, 1986.

PROCEEDINGS

International Symposium. Military Aspects of the Israeli-Arab Conflict. Jerusalem, Israel, October 12-17, 1975. Tel Aviv, Israel: University Publishing Projects, 1975.